UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,317	06/28/2004	Shinichi Kawasaki	12088/019001	9863

22511 7590 04/03/2009

OSHA LIANG L.L.P.
TWO HOUSTON CENTER
909 FANNIN, SUITE 3500
HOUSTON, TX 77010

EXAMINER	
ZERVIGON, RUDY	

ART UNIT	PAPER NUMBER
1792	

NOTIFICATION DATE	DELIVERY MODE
04/03/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@oshaliang.com
buta@oshaliang.com

Office Action Summary	Application No.	Applicant(s)	
	10/500,317	KAWASAKI ET AL.	
	Examiner	Art Unit	
	Rudy Zervigon	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *60-69* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *60-69* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 November 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/15/2008, 7/23/2007, 11/14/2006, 3/24/2006, 6/22/2005, 6/28/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 21, 2009 and February 18, 2009 are entered.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 60-66, and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denes, Ferencz S. et al. (US 20030129107 A1) in view of Watabe; Masahiro (US 5500256 A). Denes teaches a plasma (100; Figure 1,2; [0025]-[0026]) surface processing apparatus (Figure 2; [0025]-[0026]) for processing a surface of a material to be processed (200; Figure 2; [0025]-[0026]) with a processing gas plasmatized (100; Figure 1,2; [0025]-[0026]) under an electric field, said apparatus (Figure 2; [0025]-[0026]) having an electrode structure (Figure 4; [0041]) having a gas passage (408; Figure 4) through which said processing gas is passed along a passage direction (408; Figure 4) and for generating said electric field in said gas passage (408; Figure 4).

Denes further teaches:

An electrode structure (Figure 4; [0041]) according to claim 60, further comprising: a elongate lid (418; Figure 4; [0041]) made of a solid dielectric ("insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) material for closing said first opening (408; Figure 4) said lid (418; Figure 4; [0041]) having a longer length dimension in the longitudinal direction (width of 140/146/402/406; Figure 1,4) and a shorter width dimension in one of the arranging direction and the passage direction (408; Figure 4), an end part in the width direction of said elongate lid (418; Figure 4; [0041]) covering an end surface of said protruded end part (114; Figure 1) in a location more forward in said one remaining side from said first electrode body (406; Figure 4; [0041]), as claimed by claim 61

Denes further teaches:

i. An electrode structure (Figure 4; [0041]) according to claim 62, wherein said first dielectric case body (416; Figure 4;"insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) and said second dielectric case body (422; Figure 4; [0041]; "insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) are separately formed, as claimed by claim 63

ii. An electrode structure (Figure 4; [0041]) according to claim 62, wherein flow passage (408; Figure 4; [0041]) sectional area of said passage (408; Figure 4; [0041]) varies (at 422) along said gas passage direction , as claimed by claim 66 – horizontal 142 is shown as a smaller area than vertical 142.

iii. An electrode structure (Figure 4; [0041]) according to claim 62, wherein said first dielectric case body (416; Figure 4;"insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) is provided with a gas uniformizing passage (408; Figure 4; [0041]) for

dispersing said processing gas uniformly in said longitudinal direction (width of 140/146/402/406; Figure 1,4) and for introducing said processing gas into said gas passage (408; Figure 4; [0041]), as claimed by claim 69

Because Dene's drawings are not shown as drawn to scale, Denes does not teach:

an elongate metallic first electrode body (406; Figure 4; [0041]) that is longer in a longitudinal direction (width of 140/146/402/406; Figure 1,4) orthogonal to said passage direction (408; Figure 4) and shorter in the passage direction (408; Figure 4), the first electrode body (406; Figure 4; [0041]) having an elongate outer first surface (416/406 interface; Figure 4; [0041]) which is flat surface crossing with an arranging direction orthogonal to both the passage direction (408; Figure 4) and the longitudinal direction (width of 140/146/402/406; Figure 1,4) and which is longer in said longitudinal direction (width of 140/146/402/406; Figure 1,4) and shorter in the passage direction (408; Figure 4); an elongate metallic second electrode body (402; Figure 4; [0041]) that is longer in said longitudinal direction (width of 140/146/402/406; Figure 1,4) and shorter in the passage direction (408; Figure 4), said second electrode body (402; Figure 4; [0041]) being and arranged in parallel with said first electrode body (406; Figure 4; [0041]) in the arranging direction (axis along 116; Figure 1), said second electrode body (402; Figure 4; [0041]) having an elongate outer second surface (outer surfaces 402; Figure 4; [0041]) which is a flat surface crossing with the arranging direction and facing said first surface (416/406 interface; Figure 4; [0041]) in said arranging direction (axis along 116; Figure 1) and which is longer in the logitudinal direction and shorter in the passage direction (408; Figure 4), said electric field being generated between said first (outer surfaces of

406; Figure 4; [0041]) and second surfaces (outer surfaces of 402; Figure 4; [0041]); and an elongate dielectric ("insulating layer" - "ceramic coating"; Figure 3,4; [0015]) first case body (416; Figure 4; [0041]) that is longer in said longitudinal direction (width of 140/146/402/406; Figure 1,4) and shorter in the passage direction (408; Figure 4), said first case body (416; Figure 4; [0041]) being arranged in parallel with said first (402; Figure 4) and second (406; Figure 4; [0041]) electrode bodies, said dielectric ("insulating layer" - "ceramic coating"; Figure 3,4; [0015]) first case body (416; Figure 4; [0041]) being formed a cross section (Figure 4) orthogonal to said longitudinal direction (width of 140/146/402/406; Figure 1,4) into a U-shape (compare Applicant's 57a; Figure 19 to U-shaped 416 into page - Figure 1 U shape) so that said first case body (416; Figure 4; [0041]) has a first internal space (volume accupying 406 - Figure 4 is reproduced left and right) and a first opening (408; Figure 4), out of four sides of the first internal space (volume accupying 406 - Figure 4 is reproduced left and right), consisting of two sides of the arranging direction and two sides of the passage direction (408; Figure 4), three sides being surrounded by the first case body (416; Figure 4; [0041]) and a remaining side being opened to an outside and provided as the first opening, said first electrode body (406; Figure 4; [0041]) being received in said first internal space (volume accupying 406 - Figure 4 is reproduced left and right) so that said first surface (416/406 interface; Figure 4; [0041]) is contacted with an inner peripheral surface of said first case body (416; Figure 4; [0041]), said second electrode body (402; Figure 4; [0041]) being disposed outside the first internal space (volume accupying 406 - Figure 4 is reproduced left and right) of said dielectric ("insulating layer" - "ceramic coating"; Figure 3,4; [0015]) first

case body (416; Figure 4; [0041]) in said arranging direction (axis along 116; Figure 1) said first opening (408; Figure 4) facing away from said second electrode body (402; Figure 4; [0041]), said gas passage (408; Figure 4) being formed between said dielectric ("insulating layer" - "ceramic coating"; Figure 3,4; [0015]) first case body (416; Figure 4; [0041]) and said second electrode body (402; Figure 4; [0041]), said gas passage (408; Figure 4) being longer in the longitudinal direction (width of 140/146/402/406; Figure 1,4) and shorter in the passage direction (408; Figure 4), a second end the of gas passage (408; Figure 4) in the passage direction (408; Figure 4) being connected with a blowoff aperture (end of 408), an end part on a side of said first opening of said first case body being protruded in said one remaining side relative to said first electrode body – claim 60

Denes further does not teach:

i. a first end (108) of the gas passage (408; Figure 4) in the passage direction (408; Figure 4) being connected with a source of the processing gas,

ii. an electric field applied from an electric power source – claim 60

iii. one of said first (406; Figure 4; [0041]) and said second (402; Figure 4; [0041]) electrode bodies being connected with said electric power source, the other of said first and second electrode bodies being electrically grounded - claim 60

iv. an end part on a side of said first opening (408; Figure 4) of said first case body (416; Figure 4; [0041]) being protruded in said one side direction (408; Figure 4) relative to said first electrode body (406; Figure 4; [0041]) – claim 60

v. An electrode structure (Figure 4; [0041]) according to claim 60, wherein the two sides of the first internal space (volume accupying 406 - Figure 4 is reproduced left and right) in

the passage direction (408; Figure 4) and a side of the first internal space (volume accupying 406 - Figure 4 is reproduced left and right) nearer to the second electrode body (402; Figure 4; [0041]) in the arranging direction are surrounded by the first case body (416; Figure 4; [0041]), and the side of the first internal space (volume accupying 406 - Figure 4 is reproduced left and right) further from the second electrode body (402; Figure 4; [0041]) in the arranging direction is open and provided as the first opening, and wherein said electrode structure (Figure 4; [0041]) further comprises an elongate dielectric ("insulating layer" - "ceramic coating"; Figure 3,4; [0015]) *second case body* that is longer in said longitudinal direction (width of 140/146/402/406; Figure 1,4) and shorter in the passage direction (408; Figure 4), said second case body being arranged in parallel with said first case body (416; Figure 4; [0041]) in said arranging direction (axis along 116; Figure 1), said second case body being formed a cross section orthogonal to said longitudinal direction (width of 140/146/402/406; Figure 1,4) into a U-shape (compare Applicant's 57a; Figure 19 to U-shaped 416 into page - Figure 1 U shape) so that said second case body has a second internal space and a second opening, two sides of the second internal space in the passage direction and a side of the second internal space nearer to the first electrode body in the arranging direction being surrounded .by the second case body, and a side of the second internal space further from the first electrode body in the arranging direction being opened and provided as the second opening, said gas passage being defined between said first and second case bodies, said second electrode body being, received in said second internal space so that said second surface is contacted with an inner peripheral surface of said second case body, and an end part on a

side of said second opening of said second case body being protruded in said opposite side in said arranging direction relative to said second electrode body, as claimed by claim 62

vi. An electrode structure (Figure 4; [0041]) according to claim 63, wherein said first dielectric case body (416; Figure 4;"insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) has an opposing surface abutted with said second dielectric case body (422; Figure 4; [0041]; "insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]), and said opposing surface is provided with a recess to serve as said gas passage (408; Figure 4; [0041]), as claimed by claim 64

vii. An electrode structure (Figure 4; [0041]) according to claim 62, wherein said first dielectric case body (416; Figure 4;"insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) and said second dielectric case body (422; Figure 4; [0041]; "insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) are integrally connected to one another, as claimed by claim 65

Watabe teaches an electrode plasma apparatus (Figure 3) including unmixed gas injection plenums (1x-3x; Figure 4A,B; column 5; lines 18-44; column 1; lines 65-67) and electric field applied from electric power sources (40-42, Figure 3) and grounded electrodes (14; Figure 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to reproduce and/or make separable Denes's electrode structure (Figure 4; [0041]), inclusive, to power or ground Denes's electrodes (416; Figure 4; [0041]) as taught by Watabe and optimize apparatus shapes/dimensions.

Motivation to reproduce and/or make separable Denes's electrode structure (Figure 4; [0041]), inclusive, to power or ground Denes's electrodes (416; Figure 4; [0041]) as taught by Watabe is for introducing unmixed and unreacted gases into processing as taught by Watabe (column 2; lines 61-67) and for providing power/functionality for Denes's electrodes (416; Figure 4; [0041]). Further, it is well established that the duplication of parts is obvious (In re Harza , 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04). Further, it is established that the use of a one piece construction instead of interconnected components is obvious (In re Larson, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965), MPEP 2144.04).

Further, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art.(Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04)

4. Claims 67 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denes, Ferencz S. et al. (US 20030129107 A1) and Watabe; Masahiro (US 5500256 A) in view of Anders; Andre et al. (US 6137231 A). Denes and Watabe are discussed above. Denes and Watabe do not teach:

i. An electrode structure (Figure 4; [0041]) according to claim 62, wherein Dene's first dielectric case body (416; Figure 4;"insulating layer" - "ceramic coating"; Figure 3,4; [0015],[0041]) has a plate (416; Figure 3) defining said passage (408; Figure 4; [0041]), and a thickness of said plate varies along said gas passage direction (408; Figure 4; [0041]), as claimed by claim 67

ii. An electrode structure (Figure 4; [0041]) according to claim 62, wherein a distance between said first electrode body (406; Figure 4; [0041]) and said second electrode body (any other 140; Figure 1,3; [0033]) varies along said passage direction of gas flow in said gas passage direction (408; Figure 4; [0041]), as claimed by claim 68

Anders teaches a similar plasma source array (Figure 9). Specifically, Anders teaches a thickness of said plate/electrode (164/162; Figure 9) varies along a direction of gas flow in said gas passage (from 160 to outside of the structure; Figure 9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to dimension Denes's plate/electrode such that a thickness/distance varies along a direction of gas flow in said gas passage.

Motivation to dimension Denes's plate/electrode such that a thickness/distance varies along a direction of gas flow in said gas passage is for forming high quality films resulting from a "constriction" (column 4, lines 54-67; column 3, lines 1-13).

Response to Arguments

5. Applicant's arguments filed January 21, 2009 and February 18, 2009 have been fully considered but they are not persuasive.

6. Applicant states:

“

However, in Denes, the first electrode 402, the 416/406 interface, and insulating layer 416 are clearly longest in the vertical direction in which gas passes and, therefore, are not longer in the longitudinal direction and shorter in the passage direction, as now explicitly required by claim 60

“

In response, the Examiner notes that Applicant’s argument hinges on Denes’ drawings *if they were drawn to scale*. Because Denes drawings are not shown as drawn to scale, the Examiner has proposed new grounds of rejection as discussed above. Further, proportions of features in a drawing are not evidence of actual proportions when drawings are not to scale. Because the reference does not disclose that the drawings are to scale and is silent as to dimensions, arguments based on measurement of the drawing features are of little value. However, the description of the article pictured can be relied on, in combination with the drawings, for what they would reasonably teach one of ordinary skill in the art. (In re Wright,193 USPQ 332 (CCPA 1977). MPEP 2125.

Applicant states:

“

Additionally, the above limitations require that the elongate outer first surface be a fiat surface crossing with an arranging direction orthogonat to both the passage direction and the longitudinal direction. However, as shown in Figs. 1 and 4, the 416/406 interface that the Examiner equates to the elongate outer first surface of claim 60 is cylindrical and curved, and not a flat surface, as required by the claim

“

In response, the Examiner addresses this limitation with the provided statement that "it would … to … and optimize apparatus shapes/dimensions.". In particular, the Examiner believes that the major differeneces between the claimed invention and that of the Denes structure is dimension(s) and/or shape of the apparatus. Additionally, it has been established that the shape of a container is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container is significant (In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (the configuration of the claimed disposable plastic nursing container was.MPEP 2144.04).

Applicant states:

‘"

Furthermore, in Denes, only two sides of the internal space of the insulating layer 416 are surrounded by the insulating layer 416, whereas the claim as amended requires that, out of four sides of the first internal space, three sides are surrounded by the first case body. Additionally, the insulating layer 416 of Denes is opened to both the top and the bottom, whereas the claim as amended requires that only the one remaining side is opened

“

In response, the Examiner notes that because Denes' internal space (volume accupying 406 - Figure 4 is reproduced left and right) is annular, no "sides" as such can be discerned. For this reason, the Examiner addresses this limitation with the provided statement that "it would … to … and optimize apparatus shapes/dimensions.". In particular, the Examiner believes that the major differeneces between the claimed invention and that of the Denes structure is dimension(s) and/or shape of the apparatus. Additionally, it has been established that the shape of a container

is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container is significant (In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (the configuration of the claimed disposable plastic nursing container was.MPEP 2144.04).

Applicant states:

“

Watabe clearly fails to supply that which Denes lacks regarding the above Iimiations. This is evidenced by the fact that Watabe is only relied upon to teach an electric field applied from electric power sources and grounded electrodes

“

In response, the Examiner disagrees and notes that the application of the secondary reference is strictly limited to the cited teachings of Watabe of an electrode plasma apparatus (Figure 3) including unmixed gas injection plenums (1x-3x; Figure 4A,B; column 5; lines 18-44; column 1; lines 65-67) and electric field applied from electric power sources (40-42, Figure 3) and grounded electrodes (14; Figure 3).

Applicant states:

“

In Denes, the second electrode member 406, which the Examiner equates to the first electrode body of claim 60, is not received in the first internal space of the insulating layer 416, which the Examiner equates to the dielectric first case body of claim 60. Instead, the second electrode member 406 is disposed outside of the insulating layer 416. Additionally, the first electrode 402,

which the Examiner equates to the second electrode body of claim 60, is disposed inside of the first internal space of the insulating layer 416.

“

In response, the Examiner disagrees. Figure 4 of Denes clearly shows that 406 is “receieved” in Denes’ first internal space (volume accupying 406 - Figure 4 is reproduced left and right) of Denes’ insulating layer 416. In fact, it partly defines Denes’ first internal space (volume accupying 406 - Figure 4 is reproduced left and right)..

Applicant states:

“

However, Fig. 4 of Denes shows that the insulating layer 416 is disposed within a hole disposed in the second electrode member 406. Thus, the second electrode member 406 is not received in an internal space of the insulating layer 416. Additionally, the insulating layer 416 is a cylinder having an outer peripheral surface and in inner peripheral surface. Fig. 4 of Denes shows that the 416/406 interface is contacted with the outer peripheral surface of the cylinder, and not the inner peripheral surface thereof.

“

In response, the Examiner notes that Figure 4 of Denes is *a portion* of what is shown in Figure 1. For example, Figure 4 is understood to be reproduced on each side. As a result, a reasonable interpritation would thus suggest that the insulating layer 416 is disposed within a hole disposed in the second electrode member 406. And, the second electrode member 406 *is* received in an internal space of the insulating layer 416 because an adajent 416, not shown, receieves 406.

Applicant states:

“

However, claim 60 explicitly requires "the first electrode body having an elongate outer first surface" and "said first surface is contacted with an inner peripheral surface of said first case body." That is, the claim explicitly requires that an outer first surface of the first electrode body is contacted with an inner peripheral surface of the first case body. In contrast to the claimed invention, in Denes, the inner, and not the outer, surface of the second electrode member 406 is in contact with the outer peripheral, and not the inner peripheral, surface of the insulating layer 416.

“

In response, the Examiner has reassed his grounds of rejection and believes that Denes continues to teach Denes’ first electrode body (406; Figure 4; [0041]) being received in said first internal space (volume accupying 406 - Figure 4 is reproduced left and right) so that said first surface (416/406 interface; Figure 4; [0041]) is contacted with an inner peripheral surface of said first case body (416; Figure 4; [0041]). That one body is “recieved” by another body is, in the Examiner’s opinion, a question of how the apparatus was assembled or can be assembled. It appears that Denes’ Figure 4 was assembled in a manner such that Denes’ first electrode body (406; Figure 4; [0041]) is receieved, or inserted, in said first internal space (volume accupying 406 - Figure 4 is reproduced left and right).

Applicant states:

“

The Examiner's appears to rely on optimization of apparatus shape to cover the above limitations, which Examiner admits in not shown. However, the protrusion on the end part on the

side of the first opening of the first case body is not a simply optimization of the shape, because the feature is functionally advantageous in that it has an unexpected effect of helping prevent an abnormal discharge from leaking outside the first case body

‘

In response, the Examiner believes that the claim requirement indeed reduces to an optimization of shape argument. Further, Applicant’s disclosed unexpected effect is not so unexpected because Denes himself teaches a protrusion 422 in figure 4 whose function is identical to Applicant's own benefitial results:

“

The tip of the first electrode 402 is provided with an insulating layer 422 in the event that the workpiece to be treated with plasma is conductive, in which case discharge may occur between the tip of the first electrode 402 and the workpiece if such insulation is not provided. The insulating layer 422 on the tip of the first electrode 402 also helps to *prevent or hinder arcing* between the first electrode 402 and the outlet surface 412 of the second electrode 414.

“ ([0041])

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Friday schedule from 9am through 5pm. The official fax phone number for the 1792 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner

can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435

/Rudy Zervigon/

Primary Examiner, Art Unit 1792